

Critical Appraisal of an Article

What is Critical Appraisal?

Critical appraisal is:

The process of carefully And systematically analyze the
research paper to judge its trustworthiness, and its value
and relevance in a particular context.

“Critical appraisal is the process of systematically examining
research evidence to assess its validity, results, and
relevance before using it to inform a decision” (**Hill and
Spittlehouse, 2001, p.1**).

When should you Critically Appraise?

- Conducting literature reviews for grant proposals for new project
- Evaluating the effectiveness, costs, and benefits of health programs, Intervention etc.,
- Establishing new innovative in the health programs
- To Implement health policies and Public health decision making

The **Critical Appraisal** aims to help people develop the necessary skills to make sense of scientific evidence based on **validity, results and relevance.**

Research involves gathering of data ,
collection of data and analysis of the data to
produce meaningful information.

- However, many of the research are not in
good quality and many studies are biased and
their results are untrue.
- This can lead us to draw false conclusions

Different research questions require different study designs.

For example the best design for studies evaluating the effectiveness of an intervention or treatment is a **Randomized controlled trial**.

Read the abstract

- Are your issues discussed there?
- What are the main findings of the research?
- Do you want to know more after reading the abstract?
- Does it address a related question?
- Are there reasons to doubt the findings without reading the whole article?

Read the *Introduction and Discussion*

- The introduction and discussion sections will help you to identify the key concepts, goals, subjects, and themes of the research.

Methodology section

- The Methodology will give you a step-by-step description of exactly how the study was carried out.
- Where the study was done?
- From whom the data was collected ?
- Is it primary or secondary data
- And how the data was collected?

- How good is the data?
- Does the study adequately control for differences between the groups being compared?
- Are the statistical methods appropriate?
- Is the sample large enough to produce significant results?

How good are the measures?

- Do the measures accurately reflect what the researcher was trying to measure (validity)?
- How clear and appropriate are these measures? (Too broad? Too narrow? Ambiguous?)
- Are they actual measures or proxy measures?
- Are the measures well established in either prior research or through pilot testing by the researcher

What are the author's conclusions?

Compare the abstract to the *Discussion*

The discussion section is more detailed and precise than the abstract, and will explain the limitations of the research and possible implications which are not mentioned in the abstract.

Compare the raw data given in the tables with the results analyzed in the discussion and conclusions

- Are the results reported in the conclusions

consistent with what is reported in the tables?

- Is the interpretation consistent with what the actual findings were?

How well are the results related to other research on the same topic?

- In the discussion section, is there a review of how these results compare or contrast with prior research?
- If this report found something different from previous research, then it's important to question on appraising the reliability of the findings.

Critical Appraisal : Quick

- **Is the study design appropriate to the stated aims?**
- **Are the measurements likely to be valid and reliable?**
- **Was there a relevant effect size?**
- **Is the outcome (population, type of organization) generalizable to your situation?**

Levels of internal validity

1. Were there enough subjects in the study?
2. Was a control group used?
3. Were the subjects randomly assigned?
4. Was a pretest used?
5. Was the study started prior to the intervention or event?
6. Was the outcome measured in an objective and reliable way?

Assessment of a survey

- 1. Did the study address a clearly focused issue?*
- 2. Was the sample size justified?*
- 3. Could the way the sample was obtained introduce (selection) bias?*
- 4. Is the sample representative and reliable?*
- 5. Are the measurements (questionnaires) likely to be valid and reliable?*
- 6. Was the statistical significance assessed?*
- 7. Can the results be generalized?*

Appraisal of a case-control study

- 1. Did the study address a clearly focused issue?*
- 2. Where the cases and controls defined precisely?*
- 3. Was the selection of cases and controls based on external, objective and validated criteria? (selection bias)*
- 4. Are objective and validated measurement methods used and were they similar in cases and controls? (misclassification bias)*
- 5. Could there be confounding?*
- 6. Is the size of effect practically relevant?*
- 7. Are the conclusions applicable?*

Critical Appraisal of an article on Harm / Risk (Cohort Study)

1.Are the results of the study valid?

Primary Guides

- Was the exposure status clearly defined and measured?
- How was the outcome of interest measured?
- What was the follow up time and was it adequate to measure the outcome of interest?
- Was the outcome measured in the same way for both exposed & not exposed?

Secondary Guides

- How much was the attrition? (Loss to follow

2. What were the results?

- How strong is the association between exposure and outcome? (Look for Relative Risk, Hazard ratio)
- How precise is the estimates of the risk ? (Look for 95% CI and p value for statistical test of significance)

3. Will the results help me?

- Are the results applicable to my population?
- What is the magnitude of the risk ?
- Should I attempt to stop the exposure?

THANK YOU